We claim:

1. A method for selecting images of a portion of a cardiovascular system comprising:

receiving from an image scanner a plurality of images recorded over a period of time, the images representing one or more locations along the extent of the cardiovascular system; and

selecting at least a subset of the images based on common criteria determined from the plurality of images and without reference to an external signal.

2. The method of claim 1, wherein the portion of the cardiovascular system is the heart.

3. The method of claim 1, wherein the image scanner is a CT (Computer Tomography) scanner.

4. The method of claim 1, wherein the image scanner is a MRI (Magnetic Resonance Image) scanner.

5. The method of claim 1, wherein the image scanner is an Ultrasound scanner.

6. The method of claim 1, wherein selecting a subset of the images results from a determination of the blurriness of each image.

7. The method of claim 6, wherein the blurriness of the image is determined by a Fourier transform applied to the image.

8. The method of claim 6, wherein the blurriness of the image is determined by the mean pixel difference between the image and an adjacent image.

9. The method of claim 1, wherein selecting a subset of the images results from a determination of a change of a relative position of at least one vessel edge in each image.

10. A method for ordering a plurality of images of a portion of a cardiovascular system comprising:

receiving from an image scanner a plurality of images recorded over a period of time, the images representing one or more locations along the extent of the cardiovascular system;

deriving a cardiac cycle signal from the plurality of scanned images; and

assigning a phase in the cardiac cycle to each scanned image.

11. The method of claim 10, wherein the portion of the cardiovascular system is the heart.

12. The method of claim 10, wherein the image scanner is a CT (Computer Tomography) scanner.

13. The method of claim 10, wherein the image scanner is a MRI (Magnetic Resonance Image) scanner.

14. The method of claim 10, wherein the image scanner is an Ultrasound scanner.

15. The method of claim 10, wherein deriving the cardiac signal comprises:
segmenting a set of data representing a blood vessel in each image;
computing a change value for the blood vessel; and
determining the cardiac cycle signal based on a sequence of the change values for each image.

16. The method of claim 15, wherein the change value is a change in the area of a cross section of the blood vessel.

17. The method of claim 15, wherein the change value is a change in the position of a wall of the blood vessel.

18. The method of claim 10, wherein deriving the cardiac cycle signal comprises:
segmenting a set of data representing a cross-section of the aorta in each image;
computing an area value representing an area of the cross-section; and
determining the cardiac cycle signal based on a sequence of the area values for each image.

19. The method of claim 18, further comprising estimating the position of the aorta within the image data prior to segmenting the set of data.

20. The method of claim 19, wherein estimating the position of the aorta utilizes a Hough transform.

21. The method of claim 18, wherein segmenting of the aorta cross-section utilizes Dynamic Programming.

22. The method of claim 18, further comprising filtering the cardiac cycle signal to produce a smoothed cardiac cycle signal.

23. The method of claim 10, wherein deriving the cardiac cycle signal comprises:

for each image in the plurality of images performing the tasks of:

selecting an adjacent subsequent image;

calculating a mean pixel difference between the image and the subsequent image; and

determining the cardiac cycle signal based on the mean pixel differences of the images.

24. The method of claim 10, wherein deriving the cardiac cycle signal comprises:

segmenting a set of data representing a cross-section of a heart in each image;

computing an area value representing an area of the cross-section; and

determining the cardiac cycle signal based on a sequence of the area values for each image.

25. The method of claim 10, wherein deriving the cardiac cycle signal comprises:

for each image in the plurality of images performing the tasks of:

determining a first border of a heart in the image;

determining a second border of the heart in a subsequent adjacent image;

determining the difference between the first border and the second border; and

determining the cardiac cycle based on a sequence of the differences.

26. The method of claim 10, wherein the ordered set of images is further filtered to produce a subset of images, said subset of images comprising images acquired at a desired point in the cardiac cycle signal.

27. The method of claim 10, wherein the derived cardiac cycle signal is used to interpolate or reconstruct new images at specific phases in the cardiac cycle from the original scanned images or other related data.

28. A computer-readable medium having computer executable instructions for performing a method for selecting images of a portion of a cardiovascular system, the method comprising:

receiving from an image scanner a plurality of images recorded over a period of time, the images representing one or more locations along the extent of the cardiovascular system; and

selecting at least a subset of the images based on common criteria determined from the plurality of images and without reference to an external signal.

29. The computer-readable medium of claim 28, wherein the portion of the cardiovascular system is the heart.

30. The computer-readable medium of claim 28, wherein the image scanner is a CT (Computer Tomography) scanner.

31. The computer-readable medium of claim 28, wherein the image scanner is a MRI (Magnetic Resonance Image) scanner.

32. The computer-readable medium of claim 28, wherein the image scanner is an Ultrasound scanner.

33. The computer-readable medium of claim 28, wherein selecting a subset of the images results from a determination of the blurriness of each image.

34. The computer-readable medium of claim 33, wherein the blurriness of the image is determined by a Fourier transform applied to the image.

35. The computer-readable medium of claim 33, wherein the blurriness of the image is determined by the mean pixel difference between the image and an adjacent image.

36. The computer-readable medium of claim 28, wherein selecting a subset of the images results from a determination of a change of a relative position of at least one vessel edge in each image.

37. A computer-readable medium having computer executable instructions for performing a method for ordering a plurality of images of a portion of a cardiovascular system, the method comprising:

receiving from an image scanner a plurality of images recorded over a period of time, the images representing one or more locations along the extent of the cardiovascular system;

deriving a cardiac cycle signal from the plurality of scanned images; and

assigning a phase in the cardiac cycle to each scanned image.

38. The computer-readable medium of claim 37, wherein the portion of the cardiovascular system is the heart.

39. The computer-readable medium of claim 37, wherein the image scanner is a CT (Computer Tomography) scanner.

40. The computer-readable medium of claim 37, wherein the image scanner is a MRI (Magnetic Resonance Image) scanner.

41. The computer-readable medium of claim 37, wherein the image scanner is an Ultrasound scanner.

42. The computer-readable medium of claim 37, wherein deriving the cardiac signal comprises:

segmenting a set of data representing a blood vessel in each image;

computing a change value for the blood vessel; and

determining the cardiac cycle signal based on a sequence of the change values for each image.

43. The computer-readable medium of claim 42, wherein the change value is a change in the area of a cross section of the blood vessel.

44. The computer-readable medium of claim 42, wherein the change value is a change in the position of a wall of the blood vessel.

45. The computer-readable medium of claim 37, wherein deriving the cardiac cycle signal comprises:

segmenting a set of data representing a cross-section of the aorta in each image;

computing an area value representing an area of the cross-section; and

determining the cardiac cycle signal based on a sequence of the area values for each image.

46. The computer-readable medium of claim 45, further comprising estimating the position of the aorta within the image data prior to segmenting the set of data.

47. The computer-readable medium of claim 46, wherein estimating the position of the aorta utilizes a Hough transform.

48. The computer-readable medium of claim 45, wherein segmenting of the aorta cross-section utilizes Dynamic Programming.

49. The computer-readable medium of claim 45, further comprising filtering the cardiac cycle signal to produce a smoothed cardiac cycle signal.

50. The computer-readable medium of claim 37, wherein deriving the cardiac cycle signal comprises:

for each image in the plurality of images performing the tasks of:

selecting an adjacent subsequent image;

calculating a mean pixel difference between the image and the subsequent image; and

determining the cardiac cycle signal based on the mean pixel differences of the images.

51. The computer-readable medium of claim 37, wherein deriving the cardiac cycle signal comprises:

segmenting a set of data representing a cross-section of a heart in each image;

computing an area value representing an area of the cross-section; and

determining the cardiac cycle signal based on a sequence of the area values for each image.

52. The computer-readable medium of claim 37, wherein deriving the cardiac cycle signal comprises:

for each image in the plurality of images performing the tasks of:

determining a first border of a heart in the image;

determining a second border of the heart in a subsequent adjacent image;

determining the difference between the first border and the second border; and

determining the cardiac cycle based on a sequence of the differences.

53. The computer-readable medium of claim 37, wherein the ordered set of images is further

filtered to produce a subset of images, said subset of images comprising images acquired at a desired point in the cardiac cycle signal.

54. The computer-readable medium of claim 37, wherein the derived cardiac cycle signal is used to interpolate or reconstruct new images at specific phases in the cardiac cycle from the original scanned images or other related data.